

## Case Report

### Acute renal failure due to *Brucella melitensis*

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#### Abstract

We present the case of a 42-year-old male patient who applied to the emergency department of our hospital with clinical nephritis, orchitis, acute renal failure without endocarditis, and a low-grade fever. *Brucella* agglutinin titers were 1:160, Rose Bengal test was positive and *Brucella melitensis* was isolated from urine and blood cultures. A combination of oral rifampin (600 mg/day) and doxycycline (200 mg/day) was administered along with supportive treatment leading to resolution of his clinical status by eight weeks. This was a rare complication of severe renal involvement due to brucellosis which resolved with antibiotic treatment.

**Key words:** acute brucella; nephritis; renal failure

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#### Introduction

Brucellosis is a serious bacterial zoonosis caused by members of the genus, *Brucella*. It is transmitted from animals to people most frequently by occupational exposure or ingestion of unpasteurized dairy products. *Brucella melitensis* is the most common bacteria identified in the clinical cases [1]. Brucellosis tends to occur more commonly in regions with less well established animal disease control programs and in areas where public health initiatives are less effective. High-risk areas include the Mediterranean countries (Portugal, Spain, Southern France, Italy, Greece, Turkey, and North Africa), South and Central America, Eastern Europe, Africa, Asia, the Caribbean, and the Middle East. According to data from the World Health Organization, 500,000 people are diagnosed with brucellosis every year [2,3]. The disease has been prevalent in Turkey for many years and there were 14,572 cases of human brucellosis in 2003 according to data from the Ministry of Health [4].

Brucellosis is disease with atypical localization and multiorgan involvement [5-9]. It can affect people in every age group. There are many clinical studies about multiorgan involvement of the disease [10-23]. Currently, most patients are misdiagnosed with arthritis or other non-specific infections which are

important to consider in a differential diagnosis [8,9,11,13,16,21].

#### Case report

A 42-year-old man presented to the emergency department with a three-week history of weakness, generalized joint pain, sweats, nausea, loss of appetite and fever. He complained of dysuria and swelling testicles for the last two days. The patient reported that he had been previously healthy and worked as a shepherd. Physical examination revealed a man with pale skin with a temperature of 38.2°C and a pulse rate of 109/minute. His liver and spleen were 2 and 1 cm below the costal margins respectively. He had suprapubic tenderness and inflamed testicles.

Laboratory tests on admission revealed a white blood cell count of 1620 leukocytes with 61% neutrophils, platelet count 81000/mm<sup>3</sup>, hemoglobin 11 g/dL, C-reactive protein 43.3 mg/L, erythrocyte sedimentation rate 67 mm/h, blood urea nitrogen (BUN) 98 mg/L, creatinine of 3.4 mg/dL, plasma sodium level 135 mmol/L, plasma potassium level 3.7 mmol/L, aspartate aminotransferase 59 u/L, alanine transaminase 65 U/L, plasma calcium level 1.94 mmol/L, partial thromboplastin time 14.9 seconds with 1.28 INR. A urinalysis revealed moderate hematuria and the 24-hour urinalysis, proteinuria (600 mg). The urine sediment contained granular casts.

The renal-scrotal ultrasonography showed an enlarged and inflamed scrotum with increased echogenicity of the kidney. His chest X ray was normal. An electrocardiogram revealed sinus tachycardia. The rheumatoid factor and tuberculosis skin (PPD) tests were negative. Complement tests were not available, and the patient refused to consent for kidney biopsies.

The patient was hospitalized. He had oliguria with 250 ml urine volume per day. Blood and urine were cultured. At this point, he was diagnosed as having acute renal failure and a fever of unknown origin. He was hydrated and treated with ceftriaxone 2 g per day. On the second day of hospitalization, the brucella agglutinins were reported as present at a titer of 1:160, and the brucella indirect hemagglutination (Rose-Bengal) test was positive. The diagnosis of brucellosis was made, and his treatment was changed to rifampin 600 mg and doxycycline 100 mg orally twice daily to be continued for eight weeks. The diagnosis was confirmed when *Brucella melitensis* was isolated from the urine culture after seven days of incubation and from blood culture after eight days.

After four days of antibiotic therapy, the patient's fever decreased. By the fifth day, his BUN and creatinine approached normal levels, and his oliguria progressively disappeared. The azotemia and inflammation of testicles and scrotum resolved. At the end of the eight week treatment period, the patient was considered completely recovered.

## Discussion and conclusion

Brucellosis is a systemic disease which can involve any organ [13,16,19-24]. We present this case to emphasize a rare clinical variation of brucellosis, specifically the development of acute renal failure. In our patient, the diagnosis was made by serological and culture methods. After two months of treatment with rifampin and doxycycline, the hematuria, proteinuria, and azotemia all resolved.

Brucellosis is an important public health problem, especially in Turkey and in other Mediterranean and Middle Eastern countries. Poor socioeconomic conditions and low levels of adherence to basic rules for good hygiene contribute to its transmission [1-4]. In some countries, it is an endemic disease and can be a cause of fever of unknown origin, an important clinical condition whose etiology can vary depending on the geographical location of the patient.

## References

- Young EJ (2005) *Brucella* species. In: Mandell GL, Bennett JE, Dolin R, eds. Principles and practice of infectious diseases. New York: Churchill Livingstone Inc. 2666-2672.
- Pappas G, Papadimitriou P, Akritidis N (2006) The new global map of human brucellosis. *Lancet Infect Dis* 6: 91-99.
- World Health Organization (1997) Fact Sheet N173. Geneva, Switzerland: World Health Organization.
- Turkish Republic Ministry of Health (2003) Statistical data of Infectious Diseases Unit.
- Acar A, Turhan V, Diktas H, Oncul O, Cavuslu S (2009) A case of brucellosis complicated with endocarditis, pyelonephritis, sacroileitis and thyroiditis. *Mikrobiyol Bul* 43: 141-145.
- Araj GF (1999) Human brucellosis: a classical infectious disease with persistent diagnostic challenges. *Clin Lab Sci* 12: 207-212.
- Ardalan MR and Shoja MM (2006) Rapidly progressive glomerulonephritis in a patient with brucellosis. *Nephrol Dial Transplant* 21: 1743.
- Demiroglu YZ, Turunc T, Aliskan H, Colakoglu S, Arslan H (2009) Primary peritonitis due to brucellosis mimicking tuberculous peritonitis. *Turk J Gastroenterol* 20: 135-137.
- Erbay A, Bodur H, Akinci E, Baştuğ A, Çevik MA (2009) Brucellosis mimicking enteric fever. *J Infect Developing Countries* 3: 239-240.
- Garcia de Lucas MD, Castillo Dominguez JC, Martinez Gonzalez MS (2004) *Brucella myopericarditis*. *Rev Esp Cardiol* 57: 709.
- Geyik MF, Gur A, Nas K, Cevik R, Sarac J, Dikici B, Ayaz C (2002) Musculoskeletal involvement in brucellosis in different age groups: a study of 195 cases. *Swiss Med Wkly* 132: 98-105.
- Gottesman G, Vanunu D, Maayan MC, Lang R, Uziel Y, Sagi H, Wolach B (1996) Childhood brucellosis in Israel. *Pediatr Infect Dis J* 15: 610-615.
- Khorvash F, Keshteli AH, Behjati M, Salehi M, Naeini AE (2007) An unusual presentation of brucellosis, involving multiple organ systems, with low agglutinating titers: a case report. *Journal of Medical Case Reports* 1: 53.
- Leandro J, Roberto H, Antunes M (1998) *Brucella* endocarditis of the aortic valve. *European Journal of Cardiothoracic Surgery* 13: 95-97.
- Loberant N, Salamon V, Jerushalmi J, Herskovits M, Goldfeld M, Noi I (1995) Acute focal bacterial nephritis in childhood brucellosis. *Pediatr Radiol* 25 Suppl 1: S62-64.
- McLean DR, Russell N, Khan MY (1992) Neurobrucellosis. Clinical and therapeutic features. *Clin Infect Dis* 15: 582-590.
- Odeh M and Oliven A (1996) Acute brucellosis associated with massive proteinuria. *Nephron* 72: 688-689.
- Onaran M, Sen I, Polat F, Irkilata L, Tunc L, Biri H (2005) Renal brucellosis: a rare infection of the kidney. *Int J Urol* 12: 1058-1060.
- Saleh H, Abu Romeh GN, Kozma KV, Johnny M Sabha (1987) *Brucella* endocarditis causing acute renal failure. *Nephron* 46: 388-389.
- Sunmez S, Cagatay A, Karadeniz A, Ozsut H, Eraksoy H, Calangu S (2006) A case of acute hepatitis due to brucellosis. *South Med J* 99: 632-633.
- Tasova Y, Saltoglu N, Sahin G, Aksu HSZ (1999) Osteoarthricular involvement of brucellosis in Turkey. *Clin Rheumatol* 18: 214-219.

22. Toprak O, Kaptan F, Cirit M, Ormen B, Uzum A, Ersoy R, Turker N (2005) Recurrent rhabdomyolysis and mild acute renal failure associated with acute *Brucella* infection. *Nephrol Dial Transplant* 20: 848.
23. Turunc T, Demiroglu YZ, Aliskan H, Colakoglu S, Timurkaynak F, Ozdemir N, Arslan H (2008) Brucellosis in cases of end-stage renal disease. *Nephrol Dial Transplant* 23: 2344-2349.
24. Ustun I, Ozcakar L, Arda N, Duranay M, Bayrak E, Duman K, Atabay M, Cakal BE, Altundag K, Guler S (2005) *Brucella* glomerulonephritis: case report and review of the literature. *South Med J* 98: 1216-1217.

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